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ABSTRACT

This teacher's guide accompanies a competency-based, prevocational exploration curriculum in agribusiness and natural resources (CE 022 472). The teaching plan was designed to acquaint students with career opportunities in these fields and to expose them to a sample of skills required for success in the various related occupations. Approximately forty-five class periods are required to complete the exploration units, which were developed for use at eighth- and ninth-grade levels. Essential references, teaching aids, materials, and equipment are listed in this manual. Competency sheets are included for the following eight units covered by the curriculum: agricultural business; animal science; horticulture; agricultural products processing; plant science; soil science; agricultural mechanics; and natural resources. In addition, student competency sheets are included for an introductory unit and a unit on developing career plans. Each student competency sheet includes exploration area; occupational task; task competencies; student performance objective; suggested resources and procedures; and evaluation procedures. An overall evaluation checklist of the exploration experiences is found at the end of the instructional units, along with a list of fun activities and some sources for career information. (BM)

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ED174837

TEACHER'S GUIDE

EXPLORING AGRIBUSINESS AND NATURAL RESOURCES

Competency Based Education Curriculum

Prepared by:

Layle D. Lawrence
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West Virginia University

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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June 1979

CE 022 471

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PREFACE

This Prevocational Exploration Curriculum in Agribusiness and Natural Resources is one of approximately twenty-five West Virginia developed CBE curriculums. This material was prepared by Layle Lawrence, Agricultural Education Department, West Virginia University, in cooperation with the Bureau of Vocational, Technical and Adult Education, West Virginia Department of Education.

The Bureau began advocating competency-based education curriculum in 1974. Since that time, a great deal of effort has been expended in the development of materials related to prevocational exploration. Currently, curriculum exists in four job cluster areas with another two under development.

This prevocational exploration curriculum was disseminated to West Virginia teachers at the Annual Vocational Teachers Conference at West Virginia University in August 1979.

Additional copies of this material may be obtained from:

Vocational Curriculum Laboratory
Cedar Lakes Conference Center
Ripley, West Virginia 25271
Phone: (304) 372-8673

I trust this curriculum will be of assistance in your program. Any suggestions you may have for improving it may be sent to our State Curriculum Lab. Through this feedback we plan to continually update and revise our materials.

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FOREWORD

This teaching plan has been designed to acquaint students with career opportunities in the field of agriculture and natural resources and to expose them to a sample of skills required for success in the various occupations, both in production agriculture and in off-farm jobs requiring agricultural competencies.

Approximately 45 class periods will be required to complete the exploration unit, which was developed for use at eighth or ninth grade levels. Since skill exercises are non-seasonal in nature, the unit can be utilized at any time during the school year.

Cooperation of school administrators, teachers, students, parents, and resource persons is vital. An advisory committee composed of representatives of each group may be beneficial in identifying resources, obtaining cooperation, and building public understanding of the exploration program.

Essential references, teaching aids, materials, and equipment are listed in this Manual. They must be made available for the program to succeed. Likewise, opportunities for visitations to farms and businesses in the local community (field trips) are essential for maximum student development.

There is no particular order in which the various occupational areas should be taught. Nor is there any reason that alternative or additional activities should be discouraged. The innovative teacher should have the prerogative of adapting the plan to meet student and community needs.

Through activities and experiences provided in this plan, it is hoped that the student will become more aware of the myraid opportunities in the field of agriculture and natural resources; analyze his/her interests, aptitudes, and feelings toward a career in agriculture; recognize educational and experiential requirements for entry and advancement in the occupations; and be in a position to make intelligent decisions regarding future plans.

Layle D. Lawrence
Agricultural Education
West Virginia University

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ANTICIPATED SCHEDULE

UNIT	ESTIMATED PERIODS
Introduction to Agribusiness and Natural Resources	
Opportunities in Agriculture (filmstrip and discussion)	1
Administer and interpret Applied Biological and Agribusiness Interest Inventory	2
Agricultural Business	
Opportunities in Sales and Service (filmstrip and discussion)	1
*Field trip--local agribusiness	1
Exercise--Agricultural Sales	3
Animal Science	
Careers in Animal Industry (filmstrip and discussion)	1
*Field trip--livestock operation, pet shop, or veterinarian	1
Exercise--Animal Health and Grooming	3
Horticulture	
Opportunities in Horticulture (filmstrip and discussion)	1
*Field trip--greenhouse, nursery, florist, or orchard	1
Exercise--Grafting and Budding	3
Agricultural Products Processing	
Opportunities in Processing Agricultural Products (filmstrip and discussion)	1
*Field trip--meat market, produce market, or dairy processing plant	1
Exercise--Grading Eggs	3

Plant and Soil Sciences

Opportunities in Production Agriculture Careers in Crops (filmstrips and discussion)	1
*Field trip or resource person interview--farmer, seed producer, county agent or soil conservationist	1
Exercise--Germination	2
Exercise--Soil Acidity and Alkalinity	2

Agricultural Mechanics

Opportunities in Agricultural Mechanics (filmstrip and discussion)	1
*Field trip--farm machinery dealer or garden equipment sales and service center	1
Exercise--Small Engine Maintenance	5

Natural Resources

Opportunities in Natural Resources and Forestry (filmstrip and discussion)	1
*Field trip or resource person interview--forester, soil conservationist, game warden or park manager	1
Exercise--Forestry Measurements	3

Developing Career Plans

Careers in Government Services (filmstrip) Review of Agricultural Occupations experiences	1
Assignment--Agricultural Occupations of Interest and How to Enter Them (Career Plan)	2 1/2
Course evaluation	1/2
TOTAL PERIODS	45

NOTE:

* Field trips and resource person interviews should center around the questions: What occupations are represented? What do workers do? What education and/or experiences are required? How can a student begin to prepare for a career? How much money do workers make? How are workers promoted? What is the future? Are there opportunities for self-employment?

VISUAL AIDS AND REFERENCE MATERIALS

FILMSTRIPS

Careers in Crops (w/cassette and manuscript)	$7.95
Careers in Government Services (w/cassette and manuscript)	7.95
Careers in Animal Industry (w/cassette and manuscript)	7.95

Vocational Education Publications
California State Polytechnic College
San Luis Obispo, California 93401

Opportunities in Agriculture	7.50
Opportunities in Ornamental Horticulture	7.50
Opportunities in Agricultural Mechanics	7.50
Opportunities in Sales and Service	7.50
Opportunities in Production Agriculture	7.50
Opportunities in Agricultural Products	7.50
Opportunities in Natural Resources and Forestry	7.50

Vocational Agriculture Service
College of Agriculture, University of Illinois
434 Mumford Hall
Urbana, Illinois 61801

U.S. Standards for Quality of Eggs	6.80

NASCO
Ft. Atkinson, Wisconsin 53538

TEXTBOOKS (Optional)

Exploring Agriculture	12.18

Prentice-Hall
Educational Book Division
Englewood Cliffs, New Jersey 07632

or

Handbook of Agricultural Occupations	9.25

Interstate Printers and Publishers
19-27 North Jackson Street
Danville, Illinois 61832

TEACHER'S REFERENCES

Care and Operation of Small Engines, Vol. 1	$6.95

AAVIM
120 Engineering Center
Athens, Georgia 30602

Egg Grading Manual (Agriculture Handbook No. 75)	1.10
Egg Grade Chart	

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

These might be obtained free through County Agent or USDA

STUDENT INTEREST INVENTORY

The Applied Biological and Agribusiness Interest Inventory	
Test Booklet, Package of 20	3.00
Answer Sheet and Student Survey, Package of 20	1.00
Positive and Negative Scoring Keys	.10
Summary of Expressed and Inventoried Interest, Package of 20	1.00
(Specimen Set--single copy of each of above items)	1.75

Interstate Printers and Publishers
19-27 North Jackson Street
Danville, Illinois 61832

(All prices listed subject to change)

NOTE: Filmstrips are available on loan to West Virginia teachers from:

West Virginia Vocational Curriculum Laboratory
Cedar Lakes FFA-FHA Conference Center
Ripley, West Virginia 25271

CONSOLIDATED EQUIPMENT, TOOLS AND SUPPLIES LIST

The following equipment, tools and supplies will be needed to successfully operate an exploratory class of 20 students in agriculture and natural resources. If two or more classes are offered simultaneously, different exercises can be presented to each to avoid unnecessarily large equipment inventories and expenditures. Sources of specialty items are listed in Exploration Area competency sheets.

Agricultural Business

Consummable

40	5" X 7" index cards (or sheets of typing paper)

Nonconsummable

None required

Animal Science

Consummable

Rough towels or burlap
Vaseline
Rubbing alcohol
Germicidal soap (e.g., Dial)

Nonconsummable

12	Muzzles, assorted sizes (minimum number)
12	Leashes (minimum number)
6	4" or 5" veterinary thermometers
6	Tubs, tin or plastic
4	Brushes, medium bristle
2	Knot removers
4	8" mill files
2	Hound gloves
2	Scissors, dull pointed
4	Nail clippers
4	Combs, steel, fine and coarse teeth
4	Hair dryers, 1000 watt hand held

Horticulture

Consummable

	Scion wood (collect from local community)
1 lb.	Rubber budding strips, 5" x 3/16"
1 roll	Nursery grafting tape
	Tree wound dressing

Nonconsummable

10	Knives (sharp pocket knives are satisfactory)
2	Oilstones, 8" x 2" x 1"

Agricultural Products Processing

Consummable

	Plastic wrap (Saran Wrap, Handi-wrap, etc.)
5 doz.	Eggs, assorted grades and weights

Nonconsummable

10	Egg scales
10	Egg candlers
1	Filmstrip "U.S. Standards for Quality of Eggs"

Plant Science

Consummable

	Corn seed
	Beans, dried
	or
	Peanuts (in the shell)
	Paper towels
	Rubber bands
20	Plastic bags, 1 qt. size (or bread wrappers)

Nonconsummable

None required

Soil Science

Consummable

1	Soiltex kit
	Litmus paper
20	Test tubes
	Distilled water
	Lime (ground limestone or hydrated lime)
4	Pails dry soils, various textures, at least one of them acid and one alkaline

Nonconsummable

None required

Agricultural Mechanics

Consummable

Solvent (mineral spirits, kerosene, diesel fuel)
Oil, MS, 30 SAE
Oil, 2-cycle, 30 SAE
Gasoline, regular grade
Clean rags

Nonconsummable

4 sets	Socket wrenches, 3/8" sq. dr.
1 set	Deep sockets, 3/8" sq. dr.
1 set	Spark plug wrenches, 3/8" sq. dr.
1 set	Screwdrivers, standard, 4", 6", 8", 10"
1 set	Screwdrivers, phillips, 4", 6", 8"
4	Ignition files
4	12" mill bastard files
2	Oil drain pans (cake pans will do)
2	Wire brushes
2	2" paint brushes

Natural Resources

Consummable

	Plastic flagging tape
10	Wooden stakes (1" x 2" x 12") or plastic flags

Nonconsummable

10	Biltmore sticks
1	Chain tape (or 100 ft. tape measure)

AGRIBUSINESS AND NATURAL RESOURCES

EXPLORATION AREA: Introduction to Agribusiness and Natural Resources

OCCUPATIONAL TASK: Opportunities in Agriculture

OCCUPATIONAL COMPETENCIES: Become aware of agribusiness and natural resources as sources of occupational opportunities and assess interests related to careers in those areas.

STUDENT PERFORMANCE OBJECTIVE:

Upon completion of this exercise, the student will be able to name four areas of occupational opportunities in agribusiness and natural resources, and will assess his/her interests which relate to careers in those areas.

SUGGESTED RESOURCES AND PROCEDURES:

This exercise is designed to arouse interest in and create awareness of opportunities in agribusiness and natural resources, and to allow each student to assess his/her genuine interests which relate to careers in those areas. The exercise will require:

1. The filmstrip, "Opportunities in Agriculture," available from:

   Vocational Agriculture Service
   434 Mumford Hall, University of Illinois
   Urbana, Illinois 61801

2. For each student:

   a. Test Booklet, "The Applied Biological and Agribusiness Interest Inventory"

   b. Answer Sheet and Student Survey

   c. Positive and Negative Scoring Keys

   d. Summary of Expressed and Inventoried Interest

   Available from:

   Interstate Printers and Publishers
   Danville, Illinois 61832

One period should be devoted to presentation of the filmstrip followed by discussion of the diversity of occupational opportunities found in the broad field of agribusiness and natural resources.

A class period will be required to administer the interest inventory, another to allow each student to interpret results of his/her responses.

EVALUATION PROCEDURES:

The student will be able to name at least four areas of occupational opportunities in agribusiness and natural resources. S/he will assess and interpret interests related to agricultural careers by completion and analysis of "The Applied Biological and Agribusiness Interest Inventory."

EXPLORATION AREA: Agricultural Business

Representative job titles with DOT codes:

Sales Manager	163.118
Farm, Lawn and Garden Equipment Salesperson	277.358
Warehouse Foreman	929.138
Parts Clerk	289.358
Advertising Manager	164.118
Pet and Pet Supplies Salesperson	289.358
Agricultural Economist	050.088
Bookkeeper	210.388

OCCUPATIONAL TASK: Agricultural Sales

OCCUPATIONAL COMPETENCIES: Prepare sales slips, write checks, and create advertising copy.

STUDENT PERFORMANCE OBJECTIVE:

Upon completion of this exercise, the student will be able to prepare sales slips and checks without error and create appealing advertising copy for an agricultural supply business. S/he will also be able to name at least four occupations in which agricultural business skills are useful, and express his/her attitudes toward this type of work.

SUGGESTED RESOURCES AND PROCEDURES:

This exercise is self-contained. You may wish, however, to obtain checks and/or sales slips from local businesses for added interest and observation. Newspapers and agricultural magazines should be available in order for students to compare and evaluate advertisements.

The exercise requires each student to prepare sales slips, write checks, and create advertising copy. Each student will need:

A copy of the Student Manual
3 Sales Slips (duplicate)
3 Checks (duplicate)
1 Student Attitude Sheet (duplicate)
2 5" x 7" cards or sheets of typing paper

Be sure to read the exercise and become familiar with its requirements.

(In the exercise, sales tax is computed for a state with a 3% tax rate (West Virginia). If yours is different, you may wish to obtain sales tax guides from your own state for student use.)

EVALUATION PROCEDURES:

Upon completion of each activity (sales slips, checks, and advertisements), the student will submit work for checking. The attitude sheet will also be turned in for instructor and counselor use.

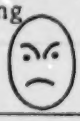
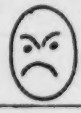
Name: _____

AGRIBUSINESS AND NATURAL RESOURCES

Area: AGRICULTURAL BUSINESS

STUDENT ATTITUDE SHEET

Please check the block which best describes your feeling toward the activities you have just completed.

SKILLS OR ACTIVITIES	Enjoyed it very much	Liked it	Didn't like it or didn't dislike it	Not very interesting 	Didn't enjoy any part of it 
1. Figuring sales tax					
2. Completing sales tickets					
3. Writing checks					
4. Creating advertisements					
5. Arithmetic					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
	Yes	No			
11. Are you now aware of jobs using these skills or activities?					
12. Would you like a job involving these skills or activities?					
13. Would you like to find out more about this area of work?					

14. Comments: _____

_____

AGTOWN FARM AND GARDEN SUPPLY

Agtown, USA 10101

_____ 19___

Sold to _____

Address _____

_____

Quantity	Description	Price	Amount
		Total	

Received By: _____ Salesman _____

Cash	Check	Charge	Returned	Rec. Acct.

No. _____

Agtown Farm and Garden Supply
Agtown, USA _____ 19____

Pay to the
order of _____ $_____

_____ Dollars

THE BANK OF AGTOWN
Agtown, USA

Memo_____ _____

Agtown Farm and Garden Supply
Agtown, USA _____ 19____

Pay to the
order of _____ $_____

_____ Dollars

THE BANK OF AGTOWN
Agtown, USA

Memo_____ _____

Agtown Farm and Garden Supply
Agtown, USA _____ 19____

Pay to the
order of _____ $_____

_____ Dollars

THE BANK OF AGTOWN
Agtown, USA

Memo_____ _____

AGRIBUSINESS AND NATURAL RESOURCES

EXPLORATION AREA: Animal Science

Representative job titles with DOT codes:

Veterinarian	073.108
Animal Groomer	356.874
Dairy Farmer	411.181
Animal Trainer	159.228
Animal Salesperson	290.478
Poultry Breeder	412.181
Cattle Rancher	413.181

OCCUPATIONAL TASK: Animal Health and Grooming

OCCUPATIONAL COMPETENCIES: Evaluate vital signs, clip nails, bathe and groom a dog

STUDENT PERFORMANCE OBJECTIVE:

Upon completion of this exercise, the student will be able to bathe and groom a dog, clip its nails, and check its temperature, pulse rate, and respiration rate. S/he will also be able to name at least four occupations in which animal science skills are useful, and express his/her attitudes toward this kind of work.

SUGGESTED RESOURCES AND PROCEDURES:

This exercise is self-contained. No additional reference materials are necessary. The following supplies and equipment will be required:

12 Muzzles
12 Leashes
6 4" or 5" Veterinary Thermometers
6 Tubs, tin or plastic
4 Brushes, medium bristle
2 Knot Removers
4 8" Mill Files
Rough towels or burlap
1 jar Vaseline
1 bottle Rubbing Alcohol
6 bars Germicidal Soap (e.g., Dial)
2 Hound Gloves
2 Scissors, dull pointed
4 Nail Clippers
4 Combs, steel, fine and coarse teeth
4 Hair Dryers, 1000 w. hand held
A Student Attitude Sheet for each student (duplicate)

(These items are available from pet supply stores, drugstores, and/or from NASCO, Ft. Atkinson, WI 53538)

Since the exercise requires that students bring dogs to school (two periods), it is suggested that:

1. The principal be informed of exercise objectives and procedures.

2. Parents be contacted by mail or phone to inform them of details of the exercise and to request their cooperation.

3. Bus drivers be made aware of need for students to bring dogs to school.

4. Arrangements be made for keeping the dogs at school during the day (a protected place to tie them or a cage for each dog).

5. A muzzle and leash be checked out to each student bringing a dog. Strict instructions must be issued that dogs are to be muzzled and on a leash at all times.

For maximum learning to take place, a minimum of one dog for each two students in class will be required.

EVALUATION PROCEDURES:

The student will relate the dog's temperature, pulse rate, and respiration rate to the instructor for verification. S/he will cut and file nails avoiding the quick, and lather, rinse, dry and comb the animal. The attitude sheet will be completed and turned in for instructor and counselor use.

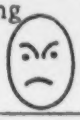
Name: _____

AGRIBUSINESS AND NATURAL RESOURCES

Area: ANIMAL SCIENCE

STUDENT ATTITUDE SHEET

Please check the block which best describes your feeling toward the activities you have just completed.

SKILLS OR ACTIVITIES	Enjoyed it very much	Liked it	Didn't like it or didn't dislike it	Not very interesting 	Didn't enjoy any part of it
1. Reading about animals					
2. Taking temperature					
3. Finding respiration rate					
4. Finding pulse rate					
5. Clipping nails					
6. Bathing the dog					
7. Brushing & combing the dog					
8. _____					
9. _____					
10. _____					
	Yes	No			
11. Are you now aware of jobs using these skills or activities?					
12. Would you like a job involving these skills or activities?					
13. Would you like to find out more about this area of work?					

14. Comments: _____

_____

AGRIBUSINESS AND NATURAL RESOURCES

EXPLORATION AREA: Horticulture

Representative job titles with DOT codes:

Flower Designer	142.081
Greenhouse Manager	185.168
Nursery Worker	406.887
Landscape Architect	019.081
Orchardist	404.181
Grounds Worker	407.884
Tree Budder	406.887

OCCUPATIONAL TASK: Grafting and Budding

OCCUPATIONAL COMPETENCIES: Make splice and whip grafts, set T-buds

STUDENT PERFORMANCE OBJECTIVE:

Upon completion of this exercise, the student will be able to unite plant parts by splice and whip grafting and T-budding. In each case, cambium layers of scion and stock will meet. S/he will also be able to name at least four occupations in which horticultural skills are useful, and express his/her attitudes toward this kind of work.

SUGGESTED RESOURCES AND PROCEDURES:

This exercise is self-contained. Additional reference materials are unnecessary. The following supplies and equipment will be required:

A Student Manual for each student
A Student Attitude Sheet for each student (duplicate)
Scion wood (see notes next page)
1 lb. Rubber budding strips, 5" x 3/16"
6 rolls Nursery grafting tape
1 qt. Tree Wound Dressing
10 Knives (pocket knives are satisfactory if sharp)
2 Whetstones, 8" x 2" x 1"

(These materials are available from most nursery supply houses or from NASCO, Ft. Atkinson, WI 53538)

Wood for budding and grafting practice can be cut anytime and stored until needed. Cut branches 1/4 to 3/8 inch diameter into 6 to 8 inch lengths. Place the wood in moist (not wet) sawdust or sphagnam moss, and store in air-tight plastic bags or bread wrappers at 33 to 40 degrees F.

Peach, apple, cherry, plum or other fruit wood is most appropriate for the exercise. Fruit wood bark has more of a tendency to "slip" than other woods.

EVALUATION PROCEDURES:

The instructor will evaluate success of splice grafts, whip grafts, and T-buds. Cambium layers of stock and scion must meet in each case and air must be excluded from cut surfaces. The attitude sheet will be completed and turned in for instructor and counselor use.

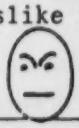
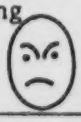
Name: _____

AGRIBUSINESS AND NATURAL RESOURCES

Area: HORTICULTURE

STUDENT ATTITUDE SHEET

Please check the block which best describes your feeling toward the activities you have just completed.

SKILLS OR ACTIVITIES	Enjoyed it very much	Liked it	Didn't like it or didn't dislike it 	Not very interesting 	Didn't enjoy any part of it
1. Learning about grafting					
2. Making a splice graft					
3. Making a whip graft					
4. Budding					
5.					
6.					
7.					
8.					
9.					
10.					
	Yes	No			
11. Are you now aware of jobs using these skills or activities?					
12. Would you like a job involving these skills or activities?					
13. Would you like to find out more about this area of work?					

14. Comments: _____

_____

AGRIBUSINESS AND NATURAL RESOURCES

EXPLORATION AREA: Agricultural Products Processing

Representative job titles with DOT codes:

Meat Cutter	316.884
Produce Manager	184.186
Poultry Grader	168.287
Milk Tester	029.381
Grain Inspector	529.387
Egg Grader	529.687

OCCUPATIONAL TASK: Grading Eggs

OCCUPATIONAL COMPETENCIES: Classify eggs by grade and weight

STUDENT PERFORMANCE OBJECTIVE:

Upon completion of this exercise, the student will be able to classify eggs by grade and weight. S/he will also be able to name at least four occupations which require agricultural products processing skills, and express his/her attitudes toward this type of work.

SUGGESTED RESOURCES AND PROCEDURES:

This exercise is self-contained. The following supplies and equipment will be necessary:

A Student Manual for each student
One copy of each of four Worksheets for each student (duplicate)
A copy of the Student Attitude Sheet for each student (duplicate)
Plastic wrap (Saran Wrap, Handi-Wrap, etc.)
Egg Grading Manual, Agriculture Handbook No. 75,
USDA (available from county extension agent or USDA),
for teacher reference
Egg Grade Chart (from county extension agent or USDA),
post on bulletin board
Eggs (see notes, next page)
* 10 Egg scales
* 10 Egg candlers
* Filmstrip "U.S. Standards for Quality of Eggs"

*These items available from NASCO, Ft. Atkinson, WI 53538

This exercise will require use of several dozens of eggs--one egg for each student to break and study and at least four dozen for grading and weighing.

If available, ungraded and unwashed eggs purchased from an egg producer are ideal. Otherwise, purchase small, medium, large, and extra large eggs so that size differences exist. Place various sizes of eggs in each carton.

Various exterior and interior grades may be created by judicious staining and cracking of shells (stain with mud), and by leaving two eggs from each carton unrefrigerated for two days; another two for four days; and another two for six days.

For easiest classroom management, prepare cartons of eggs containing various exterior and interior grades and eggs of various weights. Number the eggs in each carton with a felt-tip pen. In this manner, eggs can be pre-weighed and pre-graded to expedite checking papers following each exercise.

EVALUATION PROCEDURES:

Upon completion of each activity (exterior quality, interior quality, egg grading, and weight classification), the student will submit Worksheets for checking. The attitude sheet will also be completed and submitted for instructor and counselor use.

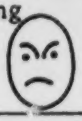
Name: _____

AGRIBUSINESS AND NATURAL RESOURCES

Area: AGRICULTURAL PRODUCTS

STUDENT ATTITUDE SHEET

Please check the block which best describes your feeling toward the activities you have just completed.

SKILLS OR ACTIVITIES	Enjoyed it very much	Liked it	Didn't like it or didn't dislike it	Not very interesting 	Didn't enjoy any part of it
1. Learning about eggs					
2. Checking exterior quality					
3. Candling eggs					
4. Grading eggs					
5. Weighing eggs					
6.					
7.					
8.					
9.					
10.					
	Yes	No			
11. Are you now aware of jobs using these skills or activities?					
12. Would you like a job involving these skills or activities?					
13. Would you like to find out more about this area of work?					

14. Comments: _____

_____

EGGS

Exterior Quality Worksheet

In each column below, record the grade you believe is correct for each egg.

Egg Number	Highest grade according to			Lowest Grade Noted
	Shell Shape and Texture	Shell Soundness	Shell Cleanliness	
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

Grades are:

AA
A
B
C
Dirty (cleanliness only)
Check (soundness only)
Leaker (soundness only)

EGGS

Interior Quality Worksheet

In each column below, record the grade you believe is correct for each egg.

Egg Number	Highest grade according to			Lowest Grade Noted
	Air Cell Depth	Yolk Condition	Condition of White	
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

Grades are:

AA
A
B
C
Inedible (yolk condition only)
Loss (white condition only)

EGGS

Grading Worksheet

Grade exterior quality and interior quality of each egg. The final grade classification will be the lower of the two grades.

Egg Number	Exterior Quality Grade	Interior Quality Grade	Final Grade
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

EGGS

Weight Classification Worksheet

Place a check (✓) in the column which indicates the correct classification for each egg.

Egg Number	Jumbo	Extra Large	Large	Medium	Small	Peewee
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						

AGRIBUSINESS AND NATURAL RESOURCES

EXPLORATION AREA: Plant Science

Representative job titles with DOT codes:

Grain Farmer	401.181
Agronomist	040.081
Seed Analyst	040.381
Seed Grower	406.181
Plant Pathologist	041.081
Nursery Worker	406.887
Plant Grader	406.887
Entomologist	041.081

OCCUPATIONAL TASK: Germination

OCCUPATIONAL COMPETENCIES: Prepare "rag doll" germination test, calculate germination rate

STUDENT PERFORMANCE OBJECTIVE:

Upon completion of this exercise, the student will be able to test seeds for germination using the "rag doll" method and calculate germination percentage. S/he will also be able to name at least four occupations in which plant science skills are useful, and express his/her attitudes toward this kind of work.

SUGGESTED RESOURCES AND PROCEDURES:

This exercise is self-contained. No additional references are necessary. The following supplies will be required:

A Student Manual for each student
A Student Attitude Sheet for each student (duplicate)
Corn seed (field corn or pop corn will do)
Beans (any dried beans from the grocery store)
or
Peanuts (in the shell)
Paper towels
Rubber bands
Plastic bags, 1 qt. size (or bread wrappers)

EVALUATION PROCEDURES:

The student will perform the "rag doll" germination test. Calculated results will be relayed to the instructor for verification. The attitude sheet will be completed and turned in for instructor and counselor use.

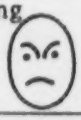
Name: _____

AGRIBUSINESS AND NATURAL RESOURCES

Area: PLANT SCIENCE

STUDENT ATTITUDE SHEET

Please check the block which best describes your feeling toward the activities you have just completed.

SKILLS OR ACTIVITIES	Enjoyed it very much	Liked it	Didn't like it or didn't dislike it	Not very interesting 	Didn't enjoy any part of it
1. Learning about seeds					
2. Preparing germination test					
3. Figuring germination rate					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
	Yes	No			
11. Are you now aware of jobs using these skills or activities?					
12. Would you like a job involving these skills or activities?					
13. Would you like to find out more about this area of work?					

14. Comments: _____

_____

AGRIBUSINESS AND NATURAL RESOURCES

EXPLORATION AREA: Soil Science

Representative job titles with DOT codes:

Farm Manager	409.168
Greenhouse Worker	406.887
Orchardist	404.181
Vegetable Grower	403.181
Soil Scientist	040.081
Soils Tester	029.381

OCCUPATIONAL TASK: Soil Acidity and Alkalinity

OCCUPATIONAL COMPETENCIES: Test pH of soils, take a soil sample

STUDENT PERFORMANCE OBJECTIVE:

Upon completion of this exercise, the student will be able to determine pH of soil by using Soiltex solution and take a representative soil sample from his/her own yard, garden, or farm. S/he will also be able to name at least four occupations in which soil science skills are useful, and express his/her attitudes toward this kind of work.

SUGGESTED RESOURCES AND PROCEDURES:

This exercise is self-contained. No additional references are necessary. The following materials will be required:

A Student Manual for each student
A Student Attitude Sheet for each student (duplicate)
**Soiltex kit
10 vials Litmus Paper
20 Test tubes
1 gal. Distilled water
10 lb. Lime (ground limestone or hydrated lime)
Four or more pails of dry soils of various textures, at least one of them acid and one alkaline. (To make an acid soil alkaline, add lime or salt. To make an alkaline soil acid, add sulphur.)

**For availability of Soiltex Kits, see next page

Soiltex Kits are available for $2.00 (for testing approximately 50 soil samples) from:

Department of Crop and Soil Science
Soil Testing Laboratory
Michigan State University
East Lansing, Michigan 48824

Kits at $3.25 each (for approximately 100 samples) are available from:

NASCO
Ft. Atkinson, WI 53538

Litmus paper can also be obtained from NASCO.

EVALUATION PROCEDURES:

The student will relate soil pH readings to the instructor for verification. The attitude sheet will be completed and turned in for instructor and counselor use.

Name: _____

AGRIBUSINESS AND NATURAL RESOURCES

Area: SOIL SCIENCE

STUDENT ATTITUDE SHEET

Please check the block which best describes your feeling toward the activities you have just completed.

SKILLS OR ACTIVITIES	Enjoyed it very much	Liked it	Didn't like it or didn't dislike it	Not very interesting	Didn't enjoy any part of it
1. Learning about pH					
2. Testing soils					
3. Taking soil samples					
4. Testing water (if you did)					
5.					
6.					
7.					
8.					
9.					
10.					
	Yes	No			
11. Are you now aware of jobs using these skills or activities?					
12. Would you like a job involving these skills or activities?					
13. Would you like to find out more about this area of work?					

14. Comments: _____

_____

AGRIBUSINESS AND NATURAL RESOURCES

EXPLORATION AREA: Agricultural Mechanics

Representative job titles with DOT codes:

Farm Equipment Mechanic	624.281
Agricultural Engineer	013.081
Farm and Garden Equipment Salesperson	277.358
Electrician	824.281
Farm Equipment Operator	409.883
Irrigator	422.887
Carpenter	860.381
Nursery Worker	406.887
Grain Farmer	401.181
Farm Equipment Operator	409.883

OCCUPATIONAL TASK: Small Engine Maintenance

OCCUPATIONAL COMPETENCIES: Service air cleaners, check and change oil, service spark plugs, clean exhaust ports, adjust carburetors

STUDENT PERFORMANCE OBJECTIVE:

Upon completion of this exercise, the student will be able to perform the following maintenance procedures on small gasoline engines:

Service air cleaner
Check and change oil (4-cycle engine)
Clean, file and gap spark plug
Clean exhaust port (2-cycle engine)
Adjust carburetor

S/he will also be able to name at least four occupations in which agricultural mechanics skills are useful, and express his/her attitudes toward this kind of work.

SUGGESTED RESOURCES AND PROCEDURES:

This exercise is self-contained. Additional references are not required. However, you may wish to acquire operator's and repair manuals for various makes and models of small gasoline engines as additional aids.

The following tools, supplies and materials will be required:

A Student Manual for each student
A Student Attitude Sheet for each student (duplicate)
An Engine Data Sheet for each student (duplicate)

4 sets	Socket wrenches, 3/8" sq. dr.
1 set	Deep sockets, 3/8" sq. dr.
1 set	Spark plug wrenches, 3/8" sq. dr.
1 set	Screwdrivers, standard, 4", 6", 8", 10"
1 set	Screwdrivers, phillips, 4", 6", 8"
4	Ignition files
4	12" mill bastard files
4	Spark plug feeler gages
2	Oil drain pans (cake pans will do)
2	Wire brushes
2	2" paint brushes
5 gal.	Solvent (mineral spirits, kerosene or diesel fuel)
5 gal.	Oil, MS, 30 SAE
1 gal.	Oil, 2-cycle, 30 SAE
5 gal.	Gasoline, regular grade
	Clean rags

(These items are available from automotive supply stores and hardware stores.)

This exercise requires that students bring small engines (preferably lawnmowers) from home. An engine for each student is ideal, but one engine for each two students can be satisfactory.

Several days in advance of the exercise, parents should be contacted by letter or phone (or both) to inform them of the objectives of the exercise and to enlist their cooperation. Stress that the exercise deals only with small engine maintenance, not overhaul and repair. Costs for oil and/or gasoline used by the student should be borne by the student or his/her parent.

EVALUATION PROCEDURES:

The student will perform the required maintenance operations according to procedures outlined in the Student Manual (or according to manufacturer's specifications, if available). The attitude sheet will be completed and turned in for instructor and counselor use.

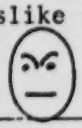
Name: _____

AGRIBUSINESS AND NATURAL RESOURCES

Area: AGRICULTURAL MECHANICS

STUDENT ATTITUDE SHEET

Please check the block which best describes your feeling toward the activities you have just completed.

SKILLS OR ACTIVITIES	Enjoyed it very much	Liked it	Didn't like it or didn't dislike it 	Not very interesting	Didn't enjoy any part of it
1. Learning about engines					
2. Servicing the air cleaner					
3. Checking & changing oil					
4. Servicing spark plugs					
5. Cleaning exhaust ports					
6. Adjusting the carburetor					
7. Sharpening mower blade					
8.					
9.					
10.					
	Yes	No			
11. Are you now aware of jobs using these skills or activities?					
12. Would you like a job involving these skills or activities?					
13. Would you like to find out more about this area of work?					

14. Comments: _____

_____

ENGINE DATA SHEET

Make of Engine (Manufacturer): _____

Model Number: _____

Serial Number: _____

Specification Number: _____

Horsepower: _____

Type of Engine:

( ) 2-cycle

( ) 4-cycle

Operating Position of Crankshaft:

( ) Vertical

( ) Horizontal

( ) Multi-position

Notes:

AGRIBUSINESS AND NATURAL RESOURCES

EXPLORATION AREA: Natural Resources

Representative job titles with DOT codes:

Forest Ranger	040.081
Soil Conservationist	040.081
Timber Cruiser	449.287
Outdoor Recreation Leader	195.228
Air Tester	012.281
Lumber Salesperson	290.478
Saw Mill Worker	667.782
Conservation Officer	379.168

OCCUPATIONAL TASK: Forestry Measurements

OCCUPATIONAL COMPETENCIES: Determine height, diameter, and board foot volumes of standing trees

STUDENT PERFORMANCE OBJECTIVE:

Upon completion of this exercise, the student will be able to measure distance by pacing, use the Biltmore stick to determine tree diameter and height, and ascertain board foot volumes of standing trees. S/he will also be able to name at least four occupations in which natural resources skills are useful, and express his/her attitudes toward this kind of work.

SUGGESTED RESOURCES AND PROCEDURES:

This exercise is self-contained. No additional reference materials are necessary. The following equipment and supplies will be required:

A Student Manual for each student
A Student Attitude Sheet for each student (duplicate)
A Tree Volume Worksheet for each student (duplicate)
10 Biltmore sticks (purchased or made with plan included in this guide)
4 rolls Plastic flagging tape
1 Chain tape (or 100 ft. tape measure)
10 Wooden stakes (1" x 2" x 12") or plastic marking flags

These items can be purchased from:

NASCO
Ft. Atkinson, WI 53538

Forestry Suppliers, Inc.
Box 8397/205 West Rankin Street
Jackson, Mississippi 39204

Modified but usable Biltmore sticks at 25¢ each be be ordered from:

Extension Service
VPI & SU
Blacksburg, VA 24061

This exercise calls for students to measure standing tree heights and diameters and to determine board foot volumes of those trees. While practice measurements may be taken on telephone and electrical poles, at least two periods of class must be spent in a wooded area to complete the exercise.

In the woods, mark one or two trees with flagging tape for demonstration and practice. Mark ten to twenty additional trees to be used in completing the exercise. Tree numbers 1, 2, 3, etc., should be marked on the flagging tape with felt tip pens so that measurements of each tree can be recorded on the Worksheet.

EVALUATION PROCEDURES:

The student will submit to the instructor the Tree Volume Worksheet (on which s/he has recorded height, diameter, and volume of trees measured) for checking and evaluation. The attitude sheet will be completed and turned in for instructor and counselor use.

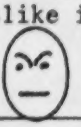
Name: _____

AGRIBUSINESS AND NATURAL RESOURCES

Area: NATURAL RESOURCES

STUDENT ATTITUDE SHEET

Please check the block which best describes your feeling toward the activities you have just completed.

SKILLS OR ACTIVITIES	Enjoyed it very much	Liked it	Didn't like it or didn't dislike it 	Not very interesting	Didn't enjoy any part of it
1. Learning to pace					
2. Finding tree diameter					
3. Finding tree height					
4. Determining tree volume					
5. Being in the woods					
6.					
7.					
8.					
9.					
10.					
	Yes	No			
11. Are you now aware of jobs using these skills or activities?					
12. Would you like a job involving these skills or activities?					
13. Would you like to find out more about this area of work?					

14. Comments: _____

_____

TREE VOLUME WORKSHEET

Tree Number	d.b.h.	Number of 16 ft. logs	Volume (board feet)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

AGRIBUSINESS AND NATURAL RESOURCES

OCCUPATIONAL TASK: Developing Career Plans

OCCUPATIONAL COMPETENCIES: Determine educational and job experience requirements for entry into selected agribusiness and natural resources careers.

STUDENT PERFORMANCE OBJECTIVE:

Upon completion of this exercise, the student will be able to state career preferences in agribusiness and natural resources, and outline educational and experiential requirements for entry.

SUGGESTED RESOURCES AND PROCEDURES:

Each student will need a copy of the "Career Plan Guide," found on the following page. To complete the plan, students may use discussion notes, textbooks, occupational briefs, and other available literature found in the classroom, library, or counselor's office.

EVALUATION PROCEDURES:

The "Career Plan Guide" will be completed and turned in to the instructor for evaluation. A copy should be duplicated and retained for instructor and counselor use.

CAREER PLAN GUIDE

NAME: _____

Career preference: (What agricultural occupations or broad area of of agriculture and natural resources interests you most?)

Career objective(s): (What are your immediate and long-term objectives for the occupation or area listed above?)

Educational plans: List the high school courses you should take and the school(s), if any, you should attend after high school in order to meet the objective(s) stated above. How long would it take and what curriculum should you enroll in?

Job experience plans: (How can you gain experience in the occupation or area selected?)

What attributes do you have that will be beneficial for the career selected?

What other agricultural occupations or areas are of interest to you?

EVALUATION OF EXPLORATION EXPERIENCES
IN AGRIBUSINESS AND NATURAL RESOURCES

We would like to know how you feel about the activities included in the Agriculture and Natural Resources exploration unit. Please circle the numbers at the right which most nearly express your opinions.

	Strongly agree	Agree	Disagree	Strongly disagree
1. The instructor did a good job in organizing and presenting material.	1	2	3	4
2. The field trips were useful in learning about agricultural occupations.	1	2	3	4
3. Classroom discussions were interesting.	1	2	3	4
4. I am now more interested in agricultural occupations than I was before experiencing activities in this class.	1	2	3	4
5. Exercises in the following areas were very interesting to me:				
Agricultural Business (Sales)	1	2	3	4
Animal Science (Animal Health & Grooming)	1	2	3	4
Horticulture (Grafting and Budding)	1	2	3	4
Agricultural Products (Grading Eggs)	1	2	3	4
Plant Science (Germination)	1	2	3	4
Soil Science (Soil Acidity & Alkalinity)	1	2	3	4
Agricultural Mechanics (Small Engines)	1	2	3	4
Natural Resources (Forestry Measurements)	1	2	3	4
6. The exercises helped me to understand what people employed in agricultural occupations do.	1	2	3	4
7. The Interest Inventory helped me identify areas of agriculture in which I am interested.	1	2	3	4
8. The filmstrips increased my interest in agricultural occupations.	1	2	3	4
9. I would like to enroll in additional courses related to agriculture.	1	2	3	4

10. The things I liked best about this exploration unit were:

11. The things I liked least about this exploration unit were:

fun activities

Fun activities presented on the following pages may be used (a) to keep those students who invariably finish assignments ahead of their classmates actively engaged in learning activities, (b) to fill class periods shortened by pep rallies, assemblies or athletic events when there's insufficient time to really get into the lesson, (c) as a refreshing change of pace from routine, or (d) as challenging but enjoyable homework assignments.

HIDE AND SEEK

Hidden are names of 26 animals. Names go across, down, and diagonally. Can you find and circle all 26?

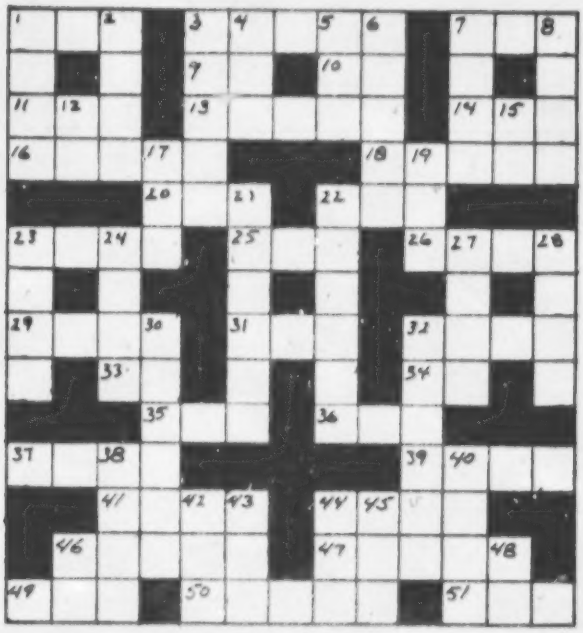
B R R A D E F X T B E A R O L Y
M O T L E B Z A M P U A O N T I
I O D W E Q O V P R L F O X P M
N P I G R L E B H J R C F U K E
K O L O A T Y N C O E F R A T N
O S P A G Z E B R A F B Q I L T
L S G T H R E E A L T G K K T O
A U L C A M E L R B E A V E R G
G M I L K R O E L I O N T W U Y
H I I R E X Y P Z E M T F G K A
G E R B I L P H A N T S K U N K
E V A A L P Q A O D H C C R T N
T R R E F L G N P R A B B I T O
U S P V L F O T M N S H E E P K
O K L V X Z E M O U S E F K X O
L L A M A F T R H A M S T E R N

JUMBLES

Can you unscramble the letters to find the names of common vegetables?

NONIO	_ _ _ _ _
ERNGE AENB	_ _ _ _ _ _ _ _ _ _
ATTOPO	_ _ _ _ _ _
GABEBAC	_ _ _ _ _ _ _
EAP	_ _ _
OPEL EBNA	_ _ _ _ _ _ _ _ _
CILRAG	_ _ _ _ _ _
YARCLE	_ _ _ _ _ _
GEG LTNAP	_ _ _ _ _ _ _ _ _
CULETET	_ _ _ _ _ _ _
SESSLURB STROPUS	_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
NORC	_ _ _ _
PUTRIN	_ _ _ _ _ _
SHIDAR	_ _ _ _ _ _
TARCOR	_ _ _ _ _ _
TEBE	_ _ _ _
GAAPASSUR	_ _ _ _ _ _ _ _ _
MOTOAT	_ _ _ _ _ _
KETHICARO	_ _ _ _ _ _ _ _ _
BUCCUREM	_ _ _ _ _ _ _ _

CROSSWORD PUZZLE



ACROSS

1. Engine part
3. Plant union
7. Water holder
9. Behold!
10. Expression of delight
11. And not
13. Lessen
14. Chest bone
16. Large plants
18. Companions
20. Sixth-sense (ab.)
22. Wager
23. A dog wags it
24. Cereal grain
26. First garden
29. Small brook
31. Agricultural youth org.
32. Care for
33. Electrical engineer (ab.)
34. Conjunction
35. Wipe your feet here
36. Hardwood tree
37. For storing silage
39. Low pH
41. One time
44. Pasture entrance
46. Buffalo
47. Coral island
49. Soft metal
50. Source of water (pl.)
51. Scientist's workshop

DOWN

1. Slope or bevel
2. Female horse
3. Transparent material
4. Steal
5. Obese
6. Written composition
7. Soil
8. Unruly crowds
12. Conjunction
15. That is (Latin ab.)
17. Long fish
19. Took food
21. Net gain
22. Put down, scold
23. Encircles a wheel
24. An engine speed
27. They play with antelope
28. Enlargement in plant stem
30. Sour fruits
32. Red vegetable
38. Source of best steaks
40. Cambium, for one
42. Stepmother of human race
43. Compass point
44. Liquid measure (ab.)
45. American Tobacco Society (ab.)
46. Two or twice (prefix)
48. Landscape Architecture (ab.)

TONGUE TWISTERS

Here are ten tongue twisters guaranteed to tie your brain in a knot and turn your tongue upside down. Say each one three times as fast as you can and see how many you can master.

Each sixth chick sat on a stick.

Tim trimmed twin trees.

If Peter Piper picked a peck of pickled peppers, how many pickled peppers did Peter Piper pick?

"Lift the ladder later," lisped Lester.

The sheep sleep in short slick sheets.

Check Chuck's checkered chicks.

Pack Posey's peas, please.

Thistle sifters sift thistles.

The swift shy swan swam slyly by.

Shep chews shoes.

WORDSEARCH

"BLACKBERRY"

Find as many words of three letters or more as you can using the letters in the word BLACKBERRY. Use each letter only once when forming a word.

15 and under - Poor	26 to 35 - Excellent
16 to 25 - Good	Above 35 - Genius

PUZZLERS

1. "Dave, I am going to pay you very generously--$18 an hour--for the 20 seconds you took to feed the dog."

   How much does Dave receive?

2. If a dozen eggs and a pound of bacon cost $1.90 and the bacon costs 60¢ more than the eggs, how much does the bacon cost?

3. How many cubic feet of dirt are in a hole two feet wide, three feet long, and two feet deep?

4. A pound of flour costs 15¢. How can you pay for it with two coins, one of which is not a nickel?

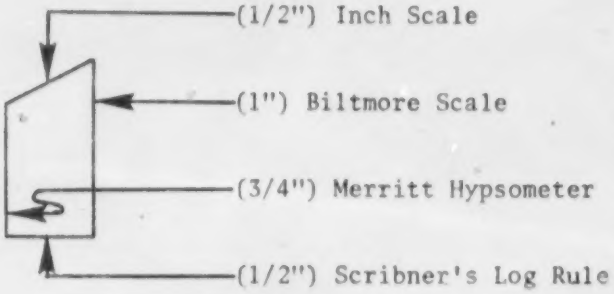
5. Explain this! How can a black cow eating green grass give white milk?

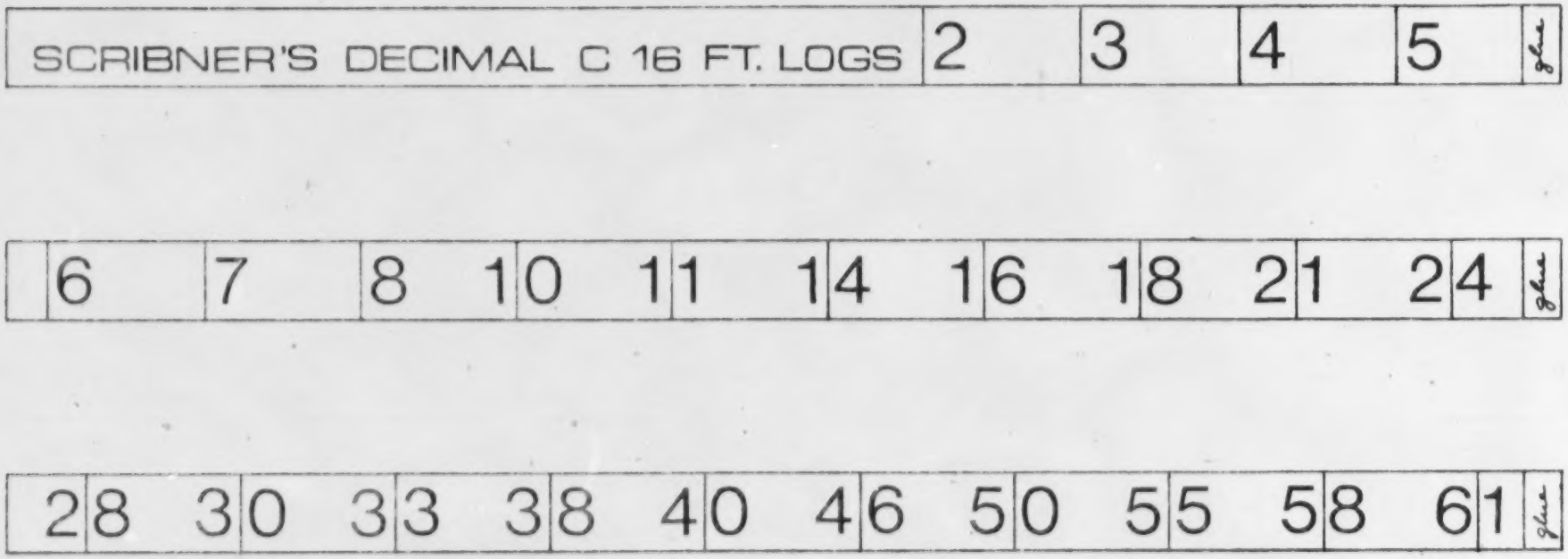
CRUISER'S STICK

A cruiser's stick (commonly known as a Biltmore stick) contains three scales used in forestry measurements. The fourth side of the scale is marked in feet and inches for general use.

The stick can be easily made with power woodworking equipment (or less easily with hand tools). Its length is 38-3/4 inches. A cross section view and measurements are shown below.

Diagrams on the following three pages can be duplicated, cut out and glued to a prepared stick. Varnish or another clear finish can be applied to protect and preserve the finished cruiser's stick.




SCRIBNER'S DECIMAL C 16 FT. LOGS
2
3
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10
11
14
16
18
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24
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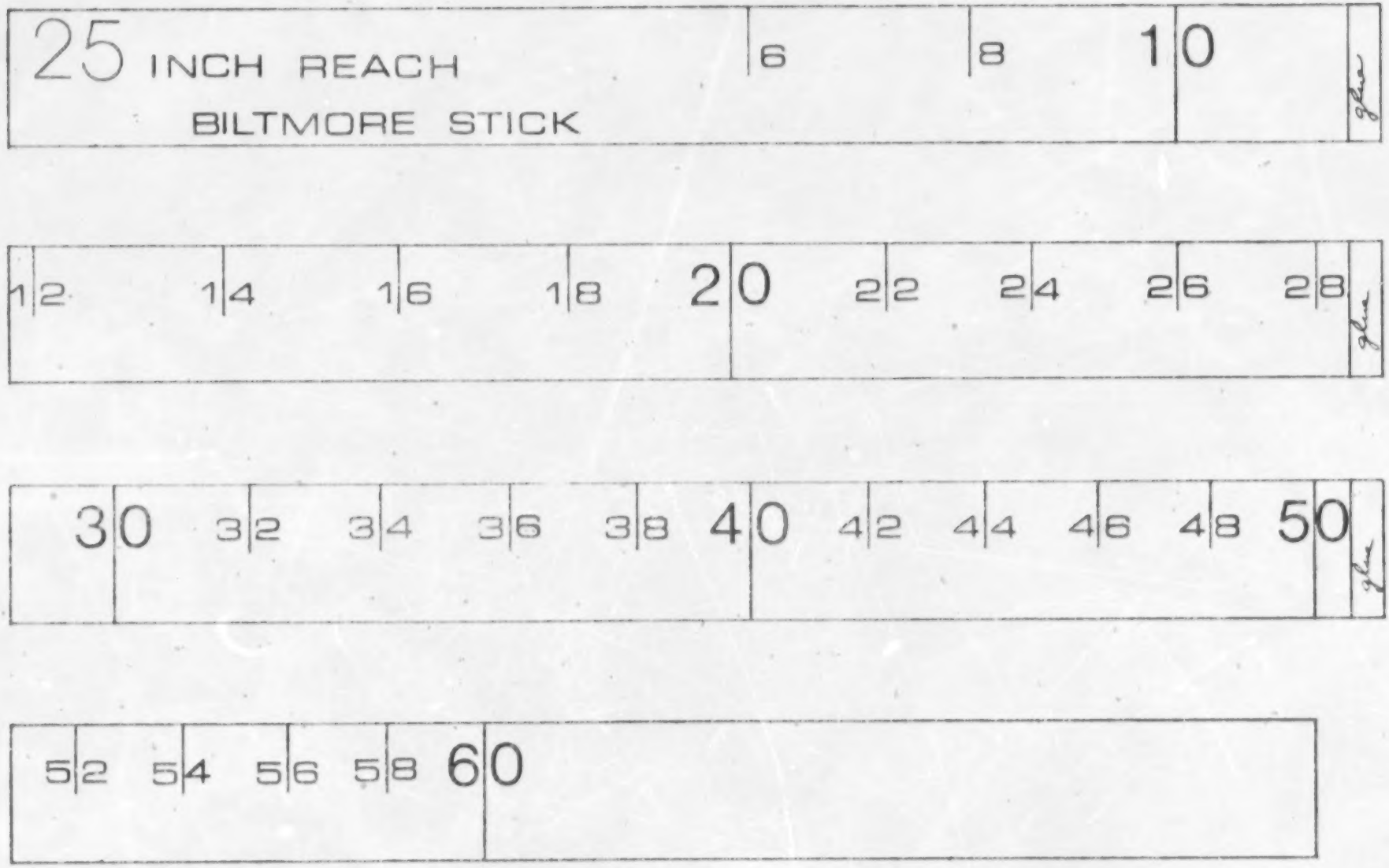
61

62


25 INCH REACH
BILTMORE STICK
6
8
10
12
14
16
18
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22
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26
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32
34
36
38
40
42
44
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48
50
52
54
56
58
60

merritt hypsometer
1 chain 16 ft. logs
1 1/2 chain 16 ft. logs
1
2
3
4
5
6
7
8
9
10

SOME SOURCES OF CAREER INFORMATION

Occupational Briefs

Chronicle Guidance Publications, Inc.
Moravia, New York 13118

Division of Agricultural Education
Department of Vocational and Technical Education
University of Illinois
Urbana, Illinois 61801

Largo Career Briefs
259 East Erie Street
Chicago, Illinois 60611

Occupational Awareness
P.O. Box 5098
Los Angeles, California 90055

Science Research Associates
259 East Erie Street
Chicago, Illinois 60611

General Sources

Dean, College of Agriculture and Forestry
West Virginia University
Morgantown, West Virginia 26506

Future Farmers of America
5630 Mount Vernon Highway
Alexandria, Virginia 22309

National 4-H Council
150 North Wacker Drive
Chicago, Illinois 60606

United States Department of Agriculture
Office of Information
Publications Division
Washington, D.C. 20250

Agricultural Mechanics

American Petroleum Institute
c/o New York Petroleum Council
757 Third Avenue
New York, New York 10017

American Society of Agricultural Engineers
1950 Niles Road
St. Joseph, Michigan 49085

American Welding Society
345 East 47th Street
New York, New York 10000

Diesel Engine Manufacturers' Association
122 East 42nd Street
New York, New York 10017

Douglas Fir Plywood Association
Tacoma 2, Washington

Farm Electrification Council, Inc.
909 University Avenue
Columbia, Missouri 65201

Farm and Industrial Equipment Institute
410 North Michigan Avenue
Chicago, Illinois 60611

Farm Equipment Manufacturers' Association
230 South Bemiston
St. Louis, Missouri 63105

National Farm and Power Equipment Dealers Association
2340 Hampton Avenue
St. Louis, Missouri 63139

National Lumber Manufacturers' Association
1619 Massachusetts Avenue, N.W.
Washington, D.C. 20036

Portland Cement Association
33 West Grand Avenue
Chicago, Illinois 60610

West Coast Lumbermen's Association
1410 S.W. Morrison
Portland, Oregon

Agricultural Products Processing

American Meat Institute
P.O. Box 3556
Washington, D.C. 20007

American Dairy Association
20 North Wacker Drive
Chicago, Illinois 60606

Amalgamated Meat Cutters and Butchers
Workmen of North America
2800 Sheridan Road
Chicago, Illinois

Institute of American Poultry Industrie
67 East Madison Street
Chicago, Illinois 60602

Institute of Food Technologists
221 North La Salle Street, Suite 2120
Chicago, Illinois 60601

National Association of Frozen Food Packers
919 18th Street, N.W.
Washington, D.C. 20006

National Canners Association
1133 20th Street, N.W.
Washington, D.C. 20009

National Livestock and Meat Board
444 North Michigan Avenue
Chicago, Illinois 60611

Processed Apples Institute, Inc.
30 East 40th Street
New York, New York 10016

United Packinghouse Workers of America
608 South Dearboran Street
Chicago, Illinois

United States Department of Agriculture
Livestock Division, Consumer and Marketing Service
Washington, D.C. 20250

Agricultural Sales and Services

American Agricultural Economics Association
c/o C. D. Kearl
Warren Hall
Cornell University
Ithaca, New York 14850

American Association of Agriculture College Editors
23 Agricultural Administration Building
2120 Fyffe Road
Columbus, Ohio 43210

American Society of Farm Managers and Rural Appraisers
P.O. Box 295
DeKalb, Illinois 60115

Agricultural Nitrogen Institute
703 DuPont Building
22 South Second Street
Memphis, Tennessee 38103

American Dehydrators Association
Room 523, 5800 Fox Ridge Drive
Mission, Kansas 66202

American Feed Manufacturers Association, Inc.
53 West Jackson Blvd.
Chicago, Illinois 60604

American Potash Institute, Inc.
1102 16th Street, N.W.
Washington, D.C. 20036

Eastern Federation of Feed Merchants
Box 248
Claverack, New York 12531

Farmland Industries
3315 North Oak Traffic Way
Kansas City, Missouri 64116

The Fertilizer Institute
1015 18th Street, N.W.
Washington, D.C. 20036

Midwest Feed Manufacturers Association
934 Wyandotte Street
Kansas City, Missouri 64105

National Agricultural Chemicals Association
The Madison Building
1155 15th Street, N.W.
Washington, D.C. 20005

National Association of County Agricultural Agents
600 South Frederick Avenue
Gaithersburg, Maryland 20760

National Vocational Agriculture Teachers Association
Box 4498
Lincoln, Nebraska 68504

Northeastern Poultry Producers Council
322 Oxford Valley Road
Fairless Hills, Pennsylvania 19030

Potash/Phosphate Institute
1649 Tullie Circle, N.E.
Atlanta, Georgia 30329

Animal Science

Agricultural Research Service
U.S.D.A.
Washington, D.C. 20250

American Dairy Science Association
903 Fairview Avenue
Urbana, Illinois 61801

America.. Poultry Association
P.O. Box 337
Great Falls, Montana 68333

American Society of Animal Science
c/o Q Corporation
39 Sheridan Avenue
Albany, New York 12210

National Association o Animal Breeders
512 Cherry Street
P.O. Box 1033
Columbia, Missouri 65201

National Livestock Producers Association
155 North Wacker Drive
Chicago, Illinois 60606

Poultry Science Association
Texas A & M University
College Station, Texas 77843

Crops and Soil Science

Agricultural Research Service
U.S.D.A.
Washington, D.C. 20250

American Forage and Grassland Council
P.O. Box 48
State College, Pennsylvania 16801

American Society of Agronomy
677 South Segoe Road
Madison, Wisconsin 53711

Crop Science Society of America
677 South Segoe Road
Madison, Wisconsin 53711

Entomological Society of America
4603 Calvert Road
College Park, Maryland 20740

National Christmas Tree Growers Association
225 East Michigan Street
Milwaukee, Wisconsin 53202

National Corn Growers Association
P.O. Box 358
Boone, Iowa 50036

Potash and Phosphate Institute
1649 Tullie Circle, N.E.
Atlanta, Georgia 30329

Soil Science Society of America
677 South Segoe Road
Madison, Wisconsin 53711

Weed Science Society of America
Agronomy Department
University of Illinois
Urbana, Illinois 61801

Horticulture

American Association of Botanical Gardens and Arboretums
Department of Horticulture
New Mexico University, Box 530
University Park, New Mexico 88070

American Association of Nurserymen, Inc.
835 Southern Building
15th and H Streets, N.W.
Washington, D.C. 20005

American Horticultural Society, Inc.
1600 Bladensburg Road, N.W.
Washington, D.C. 20002

American Institute of Park Executives, Inc.
Oglebay Park
Wheeling, West Virginia 26003

American Seed Trade Association
Southern Building, Suite 803
1030 15th Street, N.W.
Washington, D.C. 20005

American Society for Horticultural Science
Department of Horticulture
Michigan State University
East Lansing, Michigan 48823

American Society of Landscape Architects, Inc.
2000 K Street, N.W.
Washington, D.C. 20006

International Plant Propagator's Society
Department of Horticulture
Rutgers University
New Brunswick, New Jersey 08903

National Arborists Association
P.O. Box 426
Wooster, Ohio 44691

National Association of Gardeners, Inc.
194 Old Country Road
Mineola, New York 11501

National Association of Greenhouse Vegetable Growers
19120 Detroit Road
Cleveland, Ohio 44116

National Landscape Nurserymen's Association
P.O. Drawer 281
Leesburg, Florida 32748

National Parks Association
1300 New Hampshire Avenue, N.W.
Washington, D.C. 20036

Society of American Florists
Suite H-220
Sheraton Park Hotel
Washington, D.C. 20008

Natural Resources and Forestry

American Forest Institute, Education Division
1619 Massachusetts Avenue, N.W.
Washington, D.C. 20036

The American Forestry Association
1319 18th Street, N.W.
Washington, D.C. 20036

Fish and Wildlife Service
U. S. Department of the Interior
Washington, D.C. 20250

Forest Service, U.S.D.A.
1621 North Kent Street
Arlington, Virginia 20415

Information Division, Soil Conservation Service
U.S.D.A.
Washington, D.C. 20250

National Forest Products Association
1619 Massachusetts Avenue, N.W.
Washington, D.C. 20036

National Park Service
U. S. Department of the Interior
Washington, D.C. 20240

National Wildlife Federation
1412 Sixteenth Street, N.W.
Washington, D.C. 20036

Society of American Foresters
1010 Sixteenth Street, N.W.
Washington, D.C. 20036

Wildlife Management Institute
709 Wire Building
Washington, D.C. 20005

The Wildlife Society
Suite S176
3900 Wisconsin Avenue, N.W.
Washington, D.C. 20016